

17. (New) The sensor according to claim 16, further comprising a measurement circuit, the negative operating voltage powering the measurement circuit.

18. (New) The sensor according to claim 16, further comprising a circuit arrangement for analyzing a negative probe voltage, the negative operating voltage powering the circuit arrangement.

19. (New) The sensor according to claim 15, wherein the solid electrolyte element includes a ceramic element.

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20. (New) The sensor according to claim 15, wherein the solid electrolyte element includes ZrO_2 .

21. (New) An electrochemical sensor arrangement comprising:

a solid electrolyte element including a reference duct, ZrO_2 , at least one first electrode, at least one second electrode, at least one heating element and a reference duct situated between the at least one first electrode and the at least one heating element, the at least one second electrode coupled to ground, having approximately the same surface size as the at least one first electrode, lying in a layer plane of the solid electrolyte element, and situated inside the reference duct closer than the at least one first electrode to the at least one heating element, the at least one first electrode coacting with the at least one second electrode and being negatively polarized;

an arrangement to provide a negative operating voltage so that a coupling of a heater voltage is effectively blocked, the negative operating voltage being applied to the negatively polarized electrode;

a measurement circuit, the negative operating voltage powering the measurement circuit; and

a circuit arrangement to analyze a negative probe voltage, the negative operating voltage powers the circuit arrangement.

22. (New) The sensor according to claim 21, wherein the solid electrolyte element includes a solid electrolyte tube that is closed on one side.--.